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SNELL & WILMER L.L.P.
Suite 1200
1920 Main Street
Irvine, CA 92614-7230

EXAMINER	
NGUYEN, SANG H	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/782,293	YAMAGUCHI ET AL.	
	Examiner	Art Unit	
	Sang Nguyen	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/12/04 & 9/20/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

The Oath/Declaration filed on 07/12/04 is acceptable.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 09/20/04 and 07/12/04 have been entered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Larsen et al (U.S. Patent No. 6,741,348).

Regarding claim 18; Larsen et al teaches a particle size distribution analyzer (col.20 line 17) for analyzing a distribution of particles in a sample from an interaction with light (col.20 lines 35-40), comprising:

a source of light (102 of figure 1) for providing a light beam (108 of figure 1);

a test cell holder (154 of figure 1) for receiving a sample (col.9 lines 37-40);

a reference cell holder (156 of figure 1) for replicating predetermined characteristics (col. 9 lines 43-46 Larsen et al indicates that " solvent in both sample and reference cells") of the test cell holder (156 of figure 1);

a detector assembly considered to be two detectors (178, 180 of figure 1, wherein reference detector 180 and sample detector 178) for monitoring respectively an interaction of the light beams (140, 138 of figure 1), with the test cell (154 of figure 1) and the reference cell (156 of figure 1) and providing corresponding test cell output signals of the sample detector (178 of figure 1) and reference cell output signals of the reference detector (180 of figure 1); and

a control unit considered be a detector circuitry (189 of figure 1), a digitizer (190 of figure 1), and a computer (192 of figure 1) for processing the output signals of the two detectors (178, 180 of figure 1) by the detector circuitry (189 of figure 1) for comparing the test cell output signals and the reference cell output signals to determine the particle size distribution (col.20 line 34-40 and col.21 lines20-25) based on the difference (col.22 lines 9-20) between the respective output signals of the reference and sample cells (col.20 lines 17-65 and col.21 lines 15-25 and col.22 lines 1-22). See figures 1-10.

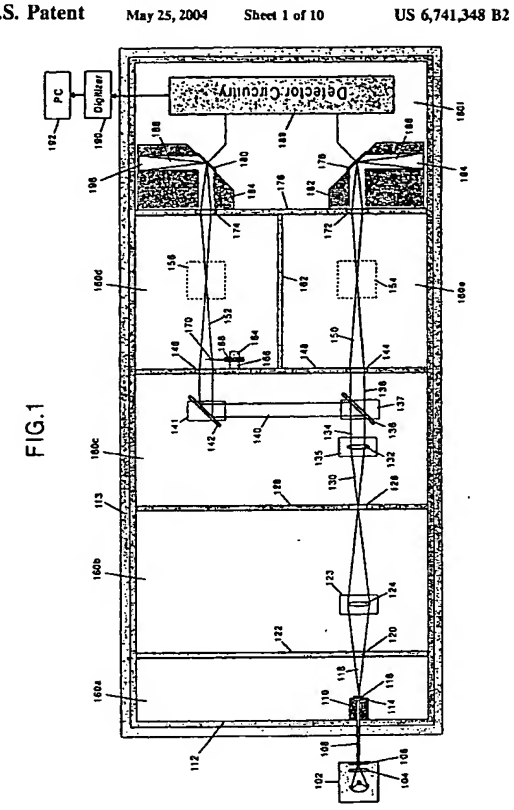

FIG.1

Regarding claim 19; Larsen et al teaches including an optical guide mechanism (figure 1) including a light guide (108 of figure 1), a plano-convex collimation lens (132 of figure 1), a dielectric beam splitter (136 of figure 1), and a mirror (142 of figure 1) for directing all or a portion of the light beam to the test cell and the reference cell (154, 156 of figure 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larsen et al (U.S. Patent No. 6,741,348) in view of Hoffman (U.S. Patent No. 4,871,248).

Regarding claim 1; Larsen et al teaches a particle size distribution analyzer (col.20 line 17) for analyzing a distribution of particles in a sample from an interaction with light (col.20 lines 35-40), comprising:

a source of light (102 of figure 1) for providing a light beam (108 of figure 1);

a test cell holder (154 of figure 1) for containing a test sample (col.9 lines 37-40) including particles (col.20 lines 22-25);

a reference cell holder (156 of figure 1) for containing a reference sample used as a reference considered to be solvent (col.9 lines 37-46);

a fundamental light guide mechanism (figure 1) including a light guide (108 of figure 1), a plano-convex collimation lens (132 of figure 1), a dielectric beam splitter (136 of figure 1), and a mirror (142 of figure 1) for dividing fundamental light irradiated from a single light source (102 of figure 1) and then guide divided fundamental lights (140, 138 of figure 1) to the reference sample and the test sample (156, 154 of figure 1), respectively;

a scattering light guide mechanism (col. 21 lines 1-13 and figures 1 and 9-10) for operative guiding scattering lights caused by irradiation of the particles of samples cells (156, 154 of figure 1) with the respective divided fundamental lights (138, 140 of figure

1) to a light intensity detecting section considered to be a sample detector (178, 180 of figure 1) configured to detect the intensity of light (col.21 lines 20-25);

a detector assembly considered to be two detectors (178, 180 of figure 1, wherein reference detector 180 and sample detector 178) for monitoring respectively an interaction of the light beams (140, 138 of figure 1), with the test cell (154 of figure 1) and the reference cell (156 of figure 1) and providing corresponding test cell output signals of the sample detector (178 of figure 1) and reference cell output signals of the reference detector (180 of figure 1); and

an information processing section considered be a detector circuitry (189 of figure 1), a digitizer (190 of figure 1), and a computer (192 of figure 1) for processing the output signals of the two detectors (178, 180 of figure 1) by the detector circuitry (189 of figure 1) for comparing the test cell output signals and the reference cell output signals to determine the particle size distribution (col.20 line 34-40 and col.21 lines20-25) based on the difference (col.22 lines 9-20) between the respective output signals of the reference and sample cells (col.20 lines 17-65 and col.21 lines 15-25 and col.22 lines 1-22). See figures 1-10.

Larsen et al teaches all of features of claimed invention except for a test sample composed of the reference sample and a group of test particles added in the test cell. However, Hoffman teaches that it is known in the art to provide a particle size analyzer (figure 1 and col.5 lines 50-59) having a reference cell and a sample cell (2 of figure 1) including a group of test particle (figure 1 and col.1 lines 52-53) and the reference

sample considered to a clear liquid (col.2 lines 33-36 and col. 3 lines 5-10). See figures 1-2.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a test sample compose of the reference sample and a group of test particles added in the test cell as taught by Hoffman for the purpose of determining accurately absorbance data of sample cell during the time of migration of the particulate substance and determining the particle size distribution of the particulate substance from the absorbance data (col.2 lines 45-50) and particles are separated by size with largest settling at the fastest rate and smallest settling rate at the slowest rate (col. 1 lines 25-27) .

Regarding claim 2; Larsen et al teaches the reference sample is composed only of a predetermined solvent, while the test sample contains the test particles dispersed in the predetermined solvent (col.9 lines 37-46).

Regarding claim 3; Larsen et al teaches the fundamental light guide mechanism (figure 1) is composed of constituent elements including optical components (124, 126, 132, 136, 142 of figure 1), all the constituent elements being fixed (figure 1, for example all the constituent elements considered to be a fiber optic guide light [108 of figure 1], a plano-convex collimation lens [132 of figure 1], a beam splitter [136 of figure 1] and a mirror [142 of figure 1], and focusing lenses [144, 146 of figure 1] being fixed together), a light dividing element (136 of figure 1) of the constituent elements being operative to divide the fundamental light spatially (col.7 lines 33-50).

Regarding claim 4; Larsen et al teaches the light dividing element is a half mirror considered to be a beam splitter (136 of figure 1) disposed on the optical path of fundamental light (124, 126, 132 of figure 1) for separating light beam (134 of figure 1) into sample beam (138 of figure 1) and reference beam (140 of figure 1).

Regarding claim 5; Larsen et al teaches all of features of claimed invention as the light dividing element is a beam splitter (136 of figure 1) and a mirror (142 of figure 1) disposed on the optical path of the fundamental light except for a pair of knife-edge mirrors. However, Larsen teaches that it is known in the art to provide two beam splitters (907, 910 of figure 9) considered to be a knife-edge mirrors for dividing light beam of the light source into sample beam (920 of figure 9) and reference beam (921 of figure 9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Larsen et al' device with a pair of knife-edge mirrors replaced by two beam splitters as taught by Larsen et al for the purpose of the same function with dividing the beam into two separated light beams to sample and reference cell.

Regarding claim 7; Laersen et al teaches the cells (154, 156 of figure 1) are formed integral with each other in compartment (160e 160 d of figure 1) of a wall (162 of figure 1).

Regarding claim 10; Larsen et al a pair of light intensity detecting sections are two detector (178, 180 of figure 1) and the scattering light guide mechanism (figures 1 and 9-10) is operative to guide scattering lights from the respective samples to the respective light intensity detecting sections (178, 180 of figure 1).

Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larsen et al in view of Hoffman as applied to claim 1 above, and further in view of Krempl et al (UU.S. Patent No. 4,525,627 submitted by Applicant).

Regarding claim 6; Larsen et al in view of Hoffman discloses all of features of claimed invention as indicate that the fundamental light guide mechanism (figure 1) is composed of constituent elements including optical components (108, 124, 126, 132, 136, 142, 146, 144 of figure 1) except for some of the constituent elements being movable for guiding the fundamental light to either of the samples selectively by moving the movable elements. However, Krempl et al teaches that it is known in the art to provide some of the constituent elements being movable (a rotatable chopper disk [24 of figure 1], pulse generator [25 of figure 1] and/or plane-parallel plates [18 pf figure 2], a rotatable polarization analyzer [21 of figure 2], and an attenuator [23 of figure 2]) for guiding the fundamental light path (2 of figure 1) to either of the samples (6, 9of figures 1-2) selectively by moving the movable elements (24, 25, 8, 21 of figures 1-2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with some of the constituent elements being movable for guiding the fundamental light to either of the samples selectively by moving the movable elements as taught by Krempl et al for the purpose of permitting precise measurements even if the background noise is high (col.5 lines 58-60) and the measurement accuracy will be improved considerably (col.7 lines 14-15).

Regarding claim 13; Larsen et al discloses all of features of claimed invention except for teaches a single light intensity detecting section is provided and the scattering light guide mechanism is operative to switch from one of scattering lights from the respective samples to the other for selectively guiding either of the scattering lights to the light intensity detecting section. However, Krempl et al teaches that it is known in the art to provide a single light intensity detecting section (20 of figure 2) is provided and the scattering light guide mechanism (18, 19 of figure 2) is operative to switch by analyzer (21 of figure 2) from one of scattering lights from the respective samples (6, 9 of figure 2) to the other for selectively guiding either of the scattering lights to the light intensity detecting section (20 of figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a single light intensity detecting section is provided and the scattering light guide mechanism is operative to switch from one of scattering lights from the respective samples to the other for selectively guiding either of the scattering lights to the light intensity detecting section as taught by Krempl et al for the purpose of alternating signal is obtained whose period is identical and whose amplitude corresponds to difference in intensity of partial beams (col.6 lines 55-62).

Claims 8, 11, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larsen et al (U.S. Patent No. 6,741,348) in view of Hoffman (U.S. Patent No. 4,871,248) and Mantz et al (U.S. Patent No. 4,937,448).

Regarding claim 8; Larsen et al teaches a particle size distribution analyzer (col.20 line 17) for analyzing a distribution of particles in a sample from an interaction with light (col.20 lines 35-40), comprising:

a source of light (102 of figure 1) for providing a light beam (108 of figure 1);

a test cell holder (154 of figure 1) for containing a test sample (col.9 lines 37-40) including particles (col.20 lines 22-25);

a reference cell holder (156 of figure 1) for containing a reference sample used as a reference considered to be solvent (col.9 lines 37-46);

a fundamental light guide mechanism (figure 1) for guiding fundamental light irradiated from a single light source (102 of figure 1);

a scattering light guide mechanism (col. 21 lines 1-13 and figures 1 and 9-10) for operative guiding scattering lights caused by irradiation of the particles of samples cells (156, 154 of figure 1) with the respective fundamental lights (138, 140 of figure 1) to a light intensity detecting section considered to be a sample detector (178, 180 of figure 1) configured to detect the intensity of light (col.21 lines 20-25), wherein the reference detector (180 of figure 1) and sample detector (178 of figure 1) for monitoring respectively an interaction of the light beams (140, 138 of figure 1), with the test cell (154 of figure 1) and the reference cell (156 of figure 1) and providing corresponding test cell output signals of the sample detector (178 of figure 1) and reference cell output signals of the reference detector (180 of figure 1); and

an information processing section considered be a detector circuitry (189 of figure 1), a digitizer (190 of figure 1), and a computer (192 of figure 1) for processing the

output signals of the two detectors (178, 180 of figure 1) by the detector circuitry (189 of figure 1) for comparing the test cell output signals and the reference cell output signals to determine the particle size distribution (col.20 line 34-40 and col.21 lines20-25) based on the difference (col.22 lines 9-20) between the respective output signals of the reference and sample cells (col.20 lines 17-65 and col.21 lines 15-25 and col.22 lines 1-22). See figures 1-10.

Larsen et al teaches all of features of claimed invention except for a test sample compose of the reference sample and a group of test particles added in the test cell. However, Hoffman teaches that it is known in the art to provide a particle size analyzer (figure 1 and col.5 lines 50-59) having a reference cell and a sample cell (2 of figure 1) including a group of test particle (figure 1 and col.1 lines 52-53) and the reference sample considered to a clear liquid (col.2 lines 33-36 and col. 3 lines 5-10). See figures 1-2.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a test sample compose of the reference sample and a group of test particles added in the test cell as taught by Hoffman for the purpose of determining accurately absorbance data of sample cell during the time of migration of the particulate substance and determining the particle size distribution of the particulate substance from the absorbance data (col.2 lines 45-50) and particles are separated by size with largest settling at the fastest rate and smallest settling rate at the slowest rate (col. 1 lines 25-27) .

Larsen et al teaches all of features of claimed invention except for a fundamental light guide mechanism operative to guide fundamental light irradiated from a single light source to the reference sample and then further guide the fundamental light having passed through the reference sample to the test sample. However, Mantz et al teaches that it is known in the art to provide a single beam laser spectrometer comprising a fundamental light guide mechanism considered to be a nonochomator (26 of figure 2) and a mechanical chopper (27 of figure 2) for operative guiding fundamental light irradiated from a single light source considered to be a laser source (22 of figure 2) to the reference sample (28 of figure 2) and then further guide the fundamental light (figure 2) having passed through the reference sample (28 of figure 2) to the test sample (30 of figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a fundamental light guide mechanism operative to guide fundamental light irradiated from a single light source to the reference sample and then further guide the fundamental light having passed through the reference sample to the test sample as taught by Mantz et al for the purpose of multiply reflected and returned back through the reference cell and a single pass absorption cell may also be utilized in combination with a single reference (col.5 lines 27-29).

Regarding claim 11; Larsen et al a pair of light intensity detecting sections are two detector (178, 180 of figure 1) and the scattering light guide mechanism (figures 1 and 9-10) is operative to guide scattering lights from the respective samples to the respective light intensity detecting sections (178, 180 of figure 1).

Regarding claim 14; Larsen et al discloses all of features of claimed invention except for teaches a single light intensity detecting section is provided and the scattering light guide mechanism is operative to switch from one of scattering lights from the respective samples to the other for selectively guiding either of the scattering lights to the light intensity detecting section. However, Hoffman teaches that it is known in the art to provide a single light intensity detecting section (6 of figure 2) is provided and the scattering light guide mechanism (5 of figure 2) is operative to switch by rotating centrifuge disk (1 of figure 2) from one of scattering lights from the respective samples (2, 3 of figure 2) to the other for selectively guiding either of the scattering lights to the light intensity detecting section (6 of figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a single light intensity detecting section is provided and the scattering light guide mechanism is operative to switch from one of scattering lights from the respective samples to the other for selectively guiding either of the scattering lights to the light intensity detecting section as taught by Hoffman for the purpose of monitoring the depletion of particles with time as the larger particles settle more quickly than the small (col.1 lines 65-68).

Claims 9, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larsen et al (U.S. Patent No. 6,741,348) in view of Hoffman (U.S. Patent No. 4,871,248) and Newman et al (U.S. Patent No.4,912,059).

Regarding claim 9; Larsen et al teaches a particle size distribution analyzer (col.20 line 17) for analyzing a distribution of particles in a sample from an interaction with light (col.20 lines 35-40), comprising:

a test cell holder (154 of figure 1) for containing a test sample (col.9 lines 37-40) including particles (col.20 lines 22-25);

a reference cell holder (156 of figure 1) for containing a reference sample used as a reference considered to be solvent (col.9 lines 37-46);

a fundamental light guide mechanism (figure 1) for guiding fundamental light irradiated to the reference cell holder (156 of figure 1) and the test cell holder (154 of figure 1);

a scattering light guide mechanism (col. 21 lines 1-13 and figures 1 and 9-10) for operative guiding scattering lights caused by irradiation of the particles of samples cells (156, 154 of figure 1) with the respective fundamental lights (138, 140 of figure 1) to a light intensity detecting section considered to be a sample detector (178, 180 of figure 1) configured to detect the intensity of light (col.21 lines 20-25), wherein reference detector (180 of figure 1) and sample detector (178 of figure 1) for monitoring respectively an interaction of the light beams (140, 138 of figure 1), with the test cell (154 of figure 1) and the reference cell (156 of figure 1) and providing corresponding test cell output signals of the sample detector (178 of figure 1) and reference cell output signals of the reference detector (180 of figure 1); and

an information processing section considered be a detector circuitry (189 of figure 1), a digitizer (190 of figure 1), and a computer (192 of figure 1) for processing the

output signals of the two detectors (178, 180 of figure 1) by the detector circuitry (189 of figure 1) for comparing the test cell output signals and the reference cell output signals to determine the particle size distribution (col.20 line 34-40 and col.21 lines20-25) based on the difference (col.22 lines 9-20) between the respective output signals of the reference and sample cells (col.20 lines 17-65 and col.21 lines 15-25 and col.22 lines 1-22). See figures 1-10.

Larsen et al teaches all of features of claimed invention except for a test sample compose of the reference sample and a group of test particles added in the test cell. However, Hoffman teaches that it is known in the art to provide a particle size analyzer (figure 1 and col.5 lines 50-59) having a reference cell and a sample cell (2 of figure 1) including a group of test particle (figure 1 and col.1 lines 52-53) and the reference sample considered to a clear liquid (col.2 lines 33-36 and col. 3 lines 5-10). See figures 1-2.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a test sample compose of the reference sample and a group of test particles added in the test cell as taught by Hoffman for the purpose of determining accurately absorbance data of sample cell during the time of migration of the particulate substance and determining the particle size distribution of the particulate substance from the absorbance data (col.2 lines 45-50) and particles are separated by size with largest settling at the fastest rate and smallest settling rate at the slowest rate (col. 1 lines 25-27) .

Larsen et al teaches all of features of claimed invention except for a pair of light sources for irradiating one of guide fundamental light to the reference sample and other to the test sample. However, Newman et al teaches that it is known in the art to provide a differential polarimeter having a teat cell (10 of figure 1) and a reference cell (12 of figure 1) and two light sources (18, 20 of figure 1) for irradiating one of guide fundamental light to the reference sample (12 of figure 1) from the light source (20 of figure 1) and other to the test sample (10 of figure 1) from the light source (18 of figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a pair of light sources for irradiating one of guide fundamental light to the reference sample and other to the test sample as taught by Newman et al et al for the purpose of comparing the relative optical rotation of the first and second beams from two light sources to determine the analyte concentrations in fluid sample (col.1 lines 55-57).

Regarding claim 12; Larsen et al a pair of light intensity detecting sections are two detector (178, 180 of figure 1) and the scattering light guide mechanism (figures 1 and 9-10) is operative to guide scattering lights from the respective samples to the respective light intensity detecting sections (178, 180 of figure 1).

Regarding claim 15; Larsen et al discloses all of features of claimed invention except for teaches a single light intensity detecting section is provided and the scattering light guide mechanism is operative to switch from one of scattering lights from the respective samples to the other for selectively guiding either of the scattering lights to the light intensity detecting section. However, Hoffman teaches that it is known in the

art to provide a single light intensity detecting section (6 of figure 2) is provided and the scattering light guide mechanism (5 of figure 2) is operative to switch by rotating centrifuge disk (1 of figure 2) from one of scattering lights from the respective samples (2, 3 of figure 2) to the other for selectively guiding either of the scattering lights to the light intensity detecting section (6 of figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a single light intensity detecting section is provided and the scattering light guide mechanism is operative to switch from one of scattering lights from the respective samples to the other for selectively guiding either of the scattering lights to the light intensity detecting section as taught by Hoffman for the purpose of monitoring the depletion of particles with time as the larger particles settle more quickly than the small (col.1 lines 65-68).

Claim 16 isrejected under 35 U.S.C. 103(a) as being unpatentable over Larsen et al (U.S. Patent No. 6,741,348) in view of Hoffman (U.S. Patent No. 4,871,248) and Koashi et al (U.S. Patent No. 5,387971).

Regarding claim 16; Larsen et al teaches a particle size distribution analyzer (col.20 line 17) for analyzing a distribution of particles in a sample from an interaction with light (col.20 lines 35-40), comprising:

a test cell holder (154 of figure 1) for containing a test sample (col.9 lines 37-40) including particles (col.20 lines 22-25);

a reference cell holder (156 of figure 1) for containing a reference sample used as a reference considered to be solvent (col.9 lines 37-46);

a fundamental light guide mechanism (figure 1) for guiding fundamental light irradiated from a light source (102 of figure 1) to the reference cell holder (156 of figure 1) and the test cell holder (154 of figure 1);

a scattering light guide mechanism (col. 21 lines 1-13 and figures 1 and 9-10) for operative guiding scattering lights caused by irradiation of the particles of samples cells (156, 154 of figure 1) with the respective fundamental lights (138, 140 of figure 1) to a light intensity detecting section considered to be a sample detector (178, 180 of figure 1) configured to detect the intensity of light (col.21 lines 20-25), wherein reference detector (180 of figure 1) and sample detector (178 of figure 1) for monitoring respectively an interaction of the light beams (140, 138 of figure 1), with the test cell (154 of figure 1) and the reference cell (156 of figure 1) and providing corresponding test cell output signals of the sample detector (178 of figure 1) and reference cell output signals of the reference detector (180 of figure 1); and

an information processing section considered be a detector circuitry (189 of figure 1), a digitizer (190 of figure 1), and a computer (192 of figure 1) for processing the output signals of the two detectors (178, 180 of figure 1) by the detector circuitry (189 of figure 1) for comparing the test cell output signals and the reference cell output signals to determine the particle size distribution (col.20 line 34-40 and col.21 lines20-25) based on the difference (col.22 lines 9-20) between the respective output signals of the reference and sample cells (col.20 lines 17-65 and col.21 lines 15-25 and col.22 lines 1-22). See figures 1-10.

Larsen et al teaches all of features of claimed invention except for a test sample compose of the reference sample and a group of test particles added in the test cell. However, Hoffman teaches that it is known in the art to provide a particle size analyzer (figure 1 and col.5 lines 50-59) having a reference cell and a sample cell (2 of figure 1) including a group of test particle (figure 1 and col.1 lines 52-53) and the reference sample considered to a clear liquid (col.2 lines 33-36 and col. 3 lines 5-10). See figures 1-2.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a test sample compose of the reference sample and a group of test particles added in the test cell as taught by Hoffman for the purpose of determining accurately absorbance data of sample cell during the time of migration of the particulate substance and determining the particle size distribution of the particulate substance from the absorbance data (col.2 lines 45-50) and particles are separated by size with largest settling at the fastest rate and smallest settling rate at the slowest rate (col. 1 lines 25-27) .

Larsen et al teaches all of features of claimed invention except for a cell moving mechanism operative to selectively move the reference cell or the test cell to the irradiation region. However, Koashi et al teaches that it is known in the art to provide apparatus for measuring concentration of a solution comprising a fundamental light guide mechanism considered to be a collimator lens (7 of figure 1), and a monochrometer (8 of figure 1) for operative guiding fundamental light irradiated from a

single light source (1 of figure 1) to the reference sample (4 of figure 1) and the test sample (4 of figure 1) to the reference sample (3 of figure 1) by a cell moving mechanism (a separator window [12 of figure 2], a connector [22 of figure 2], and a worn [19 of figure 2] is rotated by a driver [18 of figure 2]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine a particle size distribution analyzer of Larson et al with a cell moving mechanism operative to selectively move the reference cell or the test cell to the irradiation region as taught by Koashi et al et al for the purpose of measuring concentration with a true absorbance difference by canceling the background signal so that it realizes measurement having sufficient precision at a single characteristics absorption wavelength (col.11 lines 30-35).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hayes et al (5614719) discloses fluid monitoring; Namba et al (4826319) discloses method and apparatus for measuring immunological reaction; Krause et al (4795256) discloses dual; wavelength spectrophotometer system; Nagamune et al (4561779) discloses instrument for measuring concentration of substance; Mantz et al (4410273) scanning laser spectrometer; or Hopkins et al (4207469) discloses analysis of emulsions and suspensions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Patent Examiner
Sang Nguyen
Art Unit 2877